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ABSTRACT

Development of criteria for the judgment of architectural quality is presented according to an eight-part system. Each criterion is explained in terms of a general statement and definitive questions to be asked. The standards developed are--(1) concept, (2) structure, (3) physical environment, (4) emotional environment, (5) materials, (6) refinement, (7) space, and (8) land. A graphic evaluative system is given in which the complete profile of a building can be recorded. The profiles of twelve notable buildings are shown as examples. (MH)

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QUALITY PROFILES — A REPORT BY THE CAUDILL ROWLETT SCOTT TEAM

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EF 000 497

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INVESTIGATIONS

by

CAUDILL-ROWLETT-SCOTT

ARCHITECTS-PLANNERS-ENGINEERS

CRS has always been research minded. This attitude stemmed from close association with the Texas Engineering Experiment Station, as far back as 1946.

In 1952, the firm began sharing its research reports. This series was called "research-architecture." In 1954, CRS was commissioned by the American School and University to prepare a second series of "Research Reports." These reports were widely distributed in the hope of improving schoolhouses of America. A third series called INVESTIGATIONS was initiated in 1960.

This report is one of the latest series. Some of these INVESTIGATIONS involve actual research, while others represent current thoughts of some CRS staff members. There will also be times when guest professionals are brought in to contribute to the series. INVESTIGATIONS will cover various areas of architecture.

CRS hopes that this report will in some small way help our clients and professional friends achieve a better environment for themselves and their neighbors.

Pursuit of a quality architecture has always been the prime motivation of CRS. However, our problem in determining progress has been the lack of a systematic method of evaluating architectural quality. This Investigation has been prepared to help fulfill this need.

Jan Talbot
Editor of the Series
June, 1964

QUALITY PROFILES

by
Charles Lawrence
Frank Lawyer
William Caudill

Can design be measured? Some think not. We do. Professors judge their students' design problems, juries judge professional competitions, and the average layman, when he sees a building for the first time, decides quickly whether he thinks it is good or bad. So, like it or not, design is measured. And most of the time it is measured without either method or precision, or without consideration of the total relationship of the parts. A more comprehensive and precise method of measurement is needed.

DESIGN SEMINAR

To find a means of comparing the design quality of buildings was not the original intent of the design seminars held by our firm, but these meetings did help us form a yardstick for comparing the design quality of buildings. This measuring device is far from perfect, but it is a start.

The first design seminar was held in September, 1959, at Houston's Shamrock-Hilton Hotel. The second was held in Caudill's home in February, 1960. Since then many informal meetings have been

held by various members of the CRS team. Cause for the seminars was our concern that we were not making as much progress as we should in improving the quality of our architecture. We knew then, and we are even more convinced now, that in our firm and in most other firms, design performance is never stationary. It either rises or declines in quality. We wanted to make sure that in CRS it didn't decline.

DESIGN GROWTH

During the seminars we talked of many things, but primarily of improving design. We decided that there must be a life cell in design ability. To grow, it has to be nourished. We discussed how our firm might have the climate in which talent can grow and flourish--to produce better designers. During the design seminars we concluded that design ability can deteriorate in isolation. Most of the young men just out of school want to design a complete building single handed. We believe this is dangerous. When the designer is completely on his own, he becomes professionally lonesome. There is no one to argue with him; no one to criticize nor to challenge him. He lives in the wrong design ecology. Inevitably he finds himself too weak to compete in a more rugged environment where architects are real professionals. Perhaps this is why we in CRS believe so strongly in the team concept. We need the challenges. We need to be made to defend our designs. We grow and develop professionally only when we have the feedback of other professionals.

MATURE DESIGNER

We began the series of design seminars, among other reasons, because CRS had reached that point in age and volume at which it is wise to take stock of past accomplishments and future goals. We realized that at our stage of development design arthritis could easily set in. Our main concern, we agreed, must be to nourish to full maturity the design ability of both our young men and our more experienced designers. If we achieved this our best architecture could be ahead of us.

TO SERVE MAN

How could we evaluate our past design performance? Can design be evaluated? We knew that first we must agree on the essence of a great architecture. We did. A GREAT ARCHITECTURE MUST SERVE AND BETTER MAN. it was as simple as that. Thereafter, agreement eluded us. We tangled on specifics concerning the salient qualities of a great architecture. Finally, we decided that good buildings have these intrinsic qualities:

A. Concept
B. Structure
C. Physical Environment
D. Emotional Environment
E. Materials
F. Refinement
G. Space
H. Land

Consider these one by one:

CRITERIA FOR QUALITY PROFILE

CRITERIA	GENERAL STATEMENT
CONCEPT **A**	A good building has a job to do. It must respond to its intended function. In doing this, a great building expresses a clear-cut concept -- a concept that gives harmonious union to its function, to the form it takes in response to that function, and to the cost of doing these things. Therefore, the development of a strong concept is the prelude to good design. If the concept is strong, affirmative answers should be given to these questions:
STRUCTURE **B**	Most fine buildings have a structural consciousness. Some show their bones in no uncertain terms, and do it with a meaningful and pleasant rhythm that enhances their beauty. Some buildings clearly express strength in their skins. Every great building has structural significance, and usually gives affirmative answers to these questions:

QUESTIONS

1. Does the building do the job for which it was intended?
2. Does it do it economically, imaginatively, and effectively?
3. Does it make a clear statement of its purpose?
4. Does this building possess a clarity of structure?
5. Is the structure without sham?
6. Have there been creative uses of proven structural techniques?
7. Has a new structural technique been used which helps make it a better and more economical building?
8. Is the structure lean and clean?

PHYSICAL ENVIRONMENT

C

Although we are aware that architecture is more than shelter, a building, nevertheless, has to function in most instances as an economical, efficient shelter. Shelter from what? Obviously, a building must do a good job of keeping out the rain, sun, wind, and snow, but also it must keep out extraneous sounds, excessive humidity, heat, dust, and odors. It must also provide its occupants with good hearing conditions, proper lighting, and correct thermal comfort. Good architecture, therefore, provides, among other things, an effective physical environment. In doing so, there should be positive answers to these questions:

EMOTIONAL ENVIRONMENT

D

Emotion is in all great architecture. A great building is more than a dead, structural shell. It possesses a spirit. It works and feels alive. A great building is an artistic achievement because it serves an emotional function, as well as a physical one. It raises man's feeling of importance and sometimes lowers it. Psychologically, as well as physically, it inspires and serves man. One can feel, as well as see, a great architecture; therefore, consider these questions:

MATERIALS

E

A well-designed building usually takes advantage of the technological advances of the day. In an effort to build better and more economical buildings, scientists, engineers, and architects are constantly developing new building materials and discovering new techniques for using old materials. Unquestionably, some miserable mistakes have resulted where designers have blindly accepted new materials and techniques. Either the materials or the techniques did not pan out as advertised, or the designer did not know how to handle them. On the other hand, we know that many great buildings are pioneers of new materials and techniques. Therefore, it seems that the most successful buildings should offer affirmative answers to these questions:

9. Has the shelter been engineered correctly?

10. Is it designed for thermal comfort?

11. Is it properly engineered for correct sound conditioning?

12. Is the environment designed for visual comfort?

13. Have these been accomplished economically?

14. Are these environmental controls integrated?

15. Does the building have a spirit?

16. Is the building an artistic achievement?

17. Does it fulfill the intended emotional function -- sobriety when solemnity is needed; gaiety when cheerfulness is desired?

18. Can one feel greatness in this building?

19. Does the building show a creative use of old materials?

20. Does it contribute to the development of new materials?

21. Have the materials been used with technological and aesthetic propriety?

22. Have the materials been selected with the restraint necessary to create a harmonious and dignified environment?

23. Do the materials go well together?

24. Are the materials economical?

REFINEMENT

F

Great architecture, like great music, must have behind it the skill of a great technician. In architecture, the technician is the design developer -- a designer who can start with a fresh concept and not lose or distort it as the building design evolves. Such a person sees that there is meaning to all the parts, that there is continuity of details, and that there is unity through careful handling of form, texture, and color, even to the extent of bringing together unity through a union of opposites -- darks and lights, lines and planes, solids and voids. Affirmative answers to these questions are required if a building is to have design refinement -- an ingredient of great architecture.

SPACE

G

The experience of feeling inspiring space can be even more satisfying than seeing a great painting or hearing a composition by an outstanding musician. Space can be awesome or intimate, cheerful or depressing, confining or flowing, stimulating or restful. The art of defining space must be as highly developed as the arts of putting together space dividers such as walls, roofs, and floors. A truly successful building will have positive answers to these questions:

LAND

H

One of the features of a great architecture is the successful marriage of building and land. A good building must look and feel as if its parts are integral elements of the total composition, including the terrain, the trees, and the sky. Such a building with its grounds will provide positive answers to these questions:

25. Have the parts been carefully conceived and skillfully developed?

26. When combined, do they result in architectural unity?

27. Is there refinement without dullness?

28. Does the design have the quality of totality?

29. Do the spaces, both inside and outside, respond to the needs of the occupants?

30. Do the spaces have the correct functional quality, such as being fluid where a non-confined feeling is desired?

31. Has the space been skillfully conceived?

32. Do the people benefit by experiencing the spacial feeling of this building?

33. Have building and grounds been planned in totality?

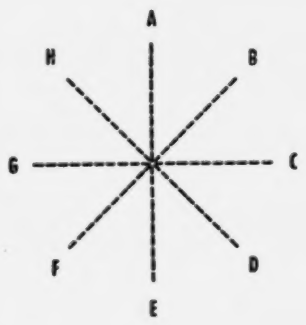
34. Does the plot function as it should?

35. Has a deliberate relationship been created between interior and exterior space?

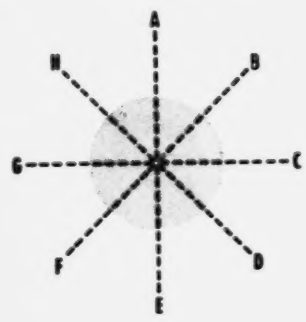
36. Is the plan imaginatively conceived and skillfully developed?

GRAPHIC PRESENTATION

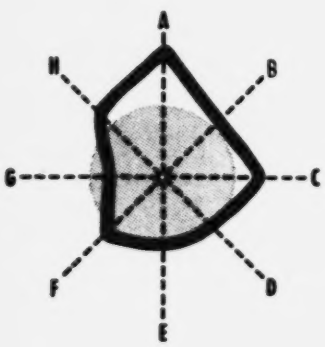
These eight criteria are by no means completely defensible. There certainly could be more, or some could be combined. Nevertheless, we think they cover the broad scope sufficiently to evaluate most buildings, and particularly ours. How can these eight criteria be put to use? In many ways. The obvious one is simply to use them as a check list. We like, however, to associate the criteria graphically with a device that we call the quality profile. By its use, we can determine at a glance the comparative strengths and weaknesses of buildings. The profiles indicate quickly whether we are going forward or backward in design. They also point to the emphasis in current designs.



The quality profile consists of a spoke-wheel chart, with each spoke representing one of the eight criteria. A building is evaluated, criterion by criterion, and a mark is placed on each spoke in accordance with its quality performance for each specific category. The hub designates negative performance, or "0", and the end of the spoke, listed as "10", represents performance of superlative quality, or what most architects would consider a major contribution in the field.



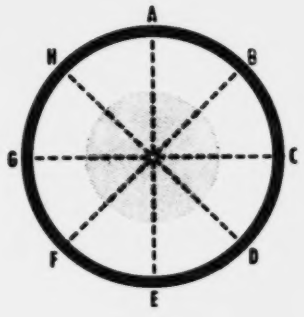
The gray area of the circle represents "average" at approximately the "5" mark.



After an evaluation is made for each of the eight criteria and a mark is placed on the respective spoke, the profile might look like this.

Obviously the perfect building would have as its quality profile a complete circle on the "10" marks. By our evaluations, there are no perfect buildings. Interestingly enough, we have found that in our evaluation of buildings of this and other countries, the profiles of the really great buildings have at least three of the prongs reaching the "10" marks.

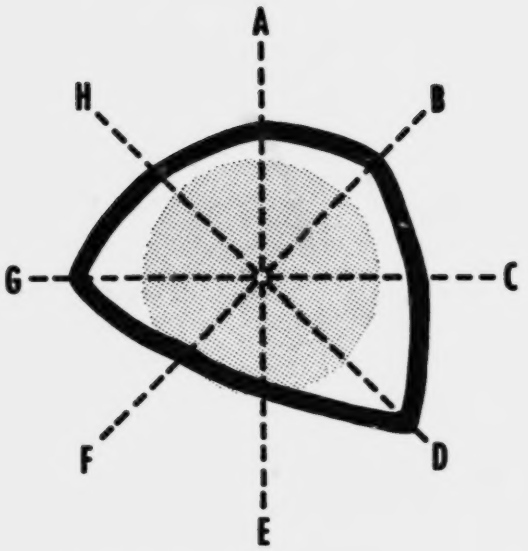
WHY NOT A PERFECT CIRCLE ?



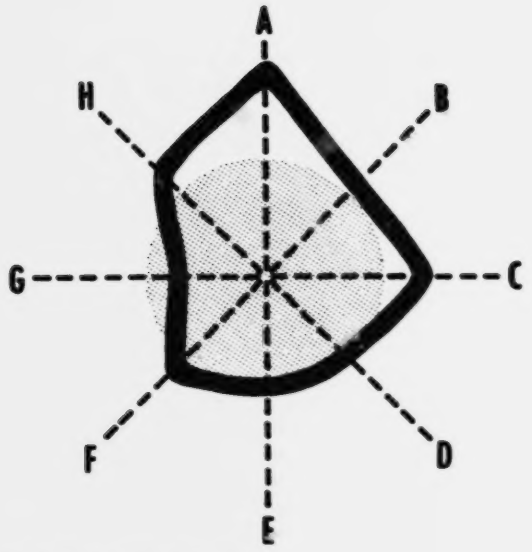
There is a simple answer to this question, we think. A major contribution achieved in one area is quite often obtained at the expense of another area. For example, it would have been most difficult for Mies van der Rohe to have made his great contribution in architectural refinements, as he did in his glass tower apartments, if he had not allowed environmental controls to be subservient to his total design approach. Nor would Frank Lloyd Wright have created the wonderful space feeling in the Guggenheim Museum if he had adhered to a direct functional approach. Does this mean that we should not work towards a total architectural approach? Absolutely not. Of course, some buildings could have perfect circles for their profiles and represent complete banality -- all 2 or 3 marks. But some architects have designed buildings that have big and fat profiles approaching the "10" mark circle. So they are achieving total design and are solving problems without creating others.

EXAMPLES OF PROFILES

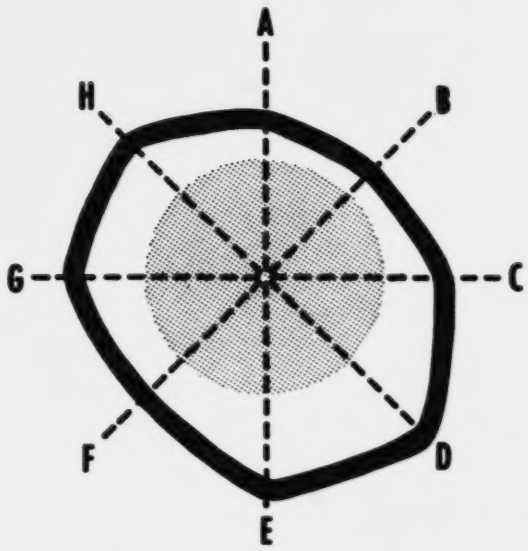
The following profiles show buildings evaluated by CRS teams. It is most interesting to us to note the different emphases that the architects have placed on their buildings. By studying the profiles, we have learned a lot about our own buildings and about our own approach. The buildings chosen for evaluation as profiles represent established, high-quality, distinguished buildings.



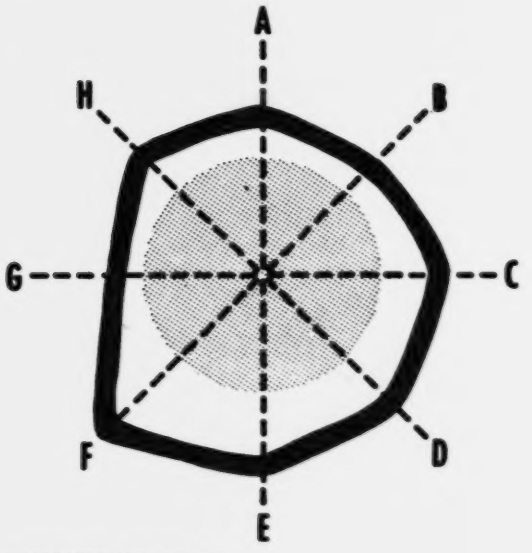
GUGGENHEIM MUSEUM
Frank Lloyd Wright



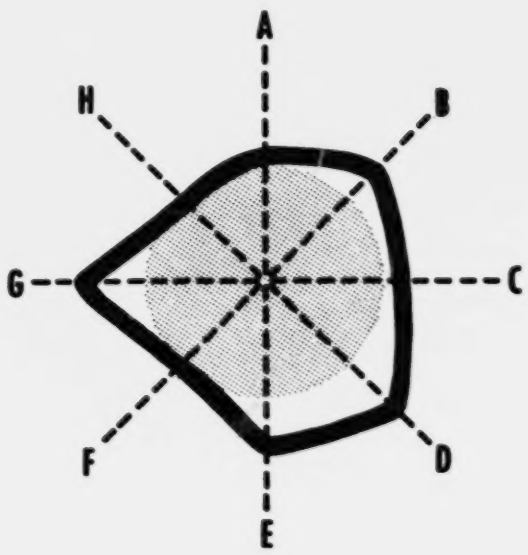
HILLSDALE HIGH SCHOOL
John Lyon Reid



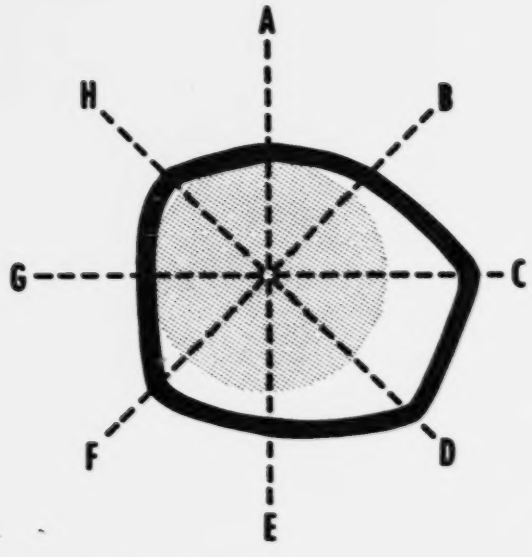
TALIESIN WEST
Frank Lloyd Wright



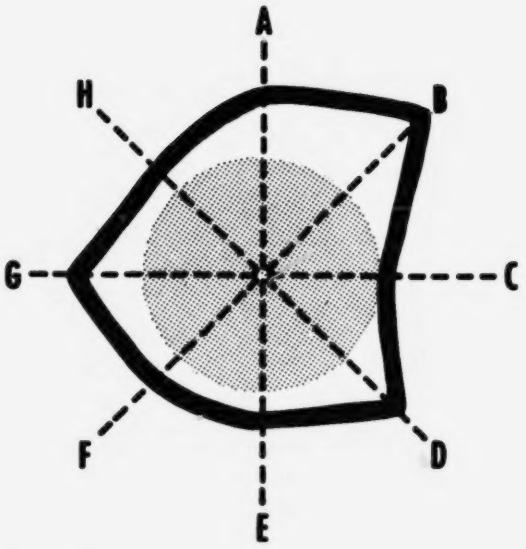
TENNESSEE BUILDING
Skidmore, Owings & Merrill



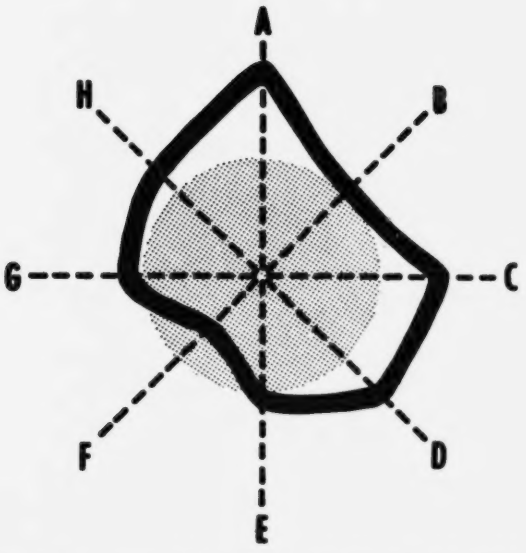
TWA FLIGHT CENTER
Eero Saarinen and Associates



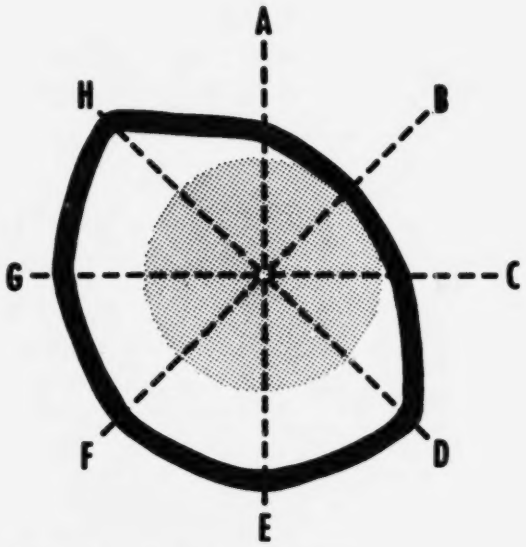
U.S. EMBASSY IN NEW DELHI
Edward Durell Stone



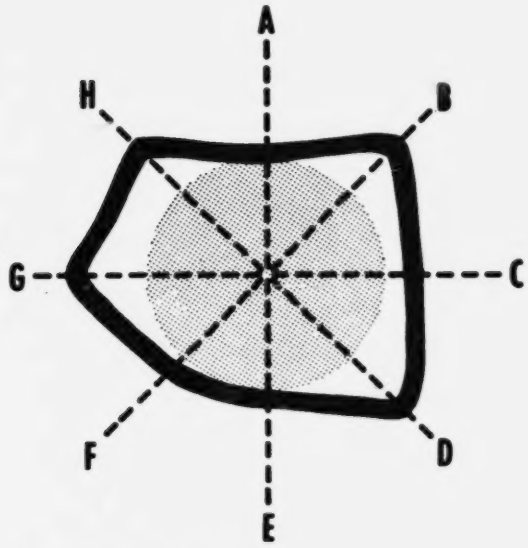
ST. LOUIS AIR TERMINAL
Hellmuth, Yamasaki & Leinweber



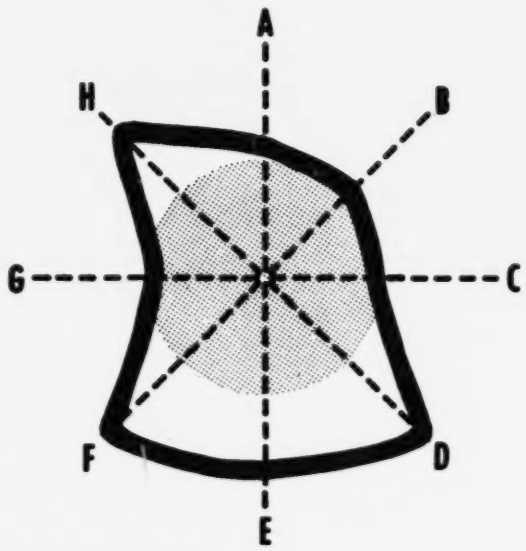
THE OLIN HALL OF SCIENCE, COLORADO COLLEGE
Caudill, Rowlett & Scott



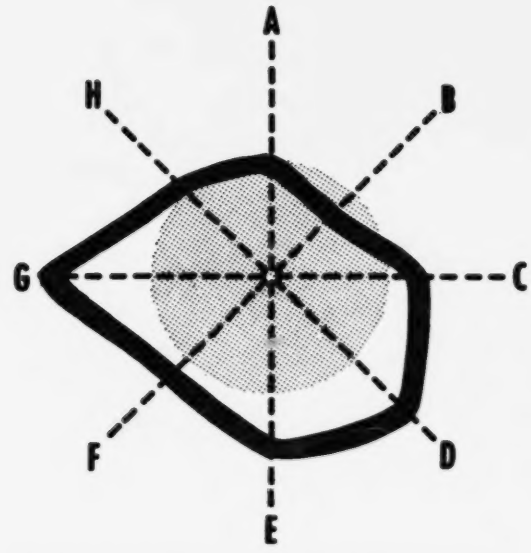
YALE UNIVERSITY RESIDENCE HALLS
Eero Saarinen and Associates



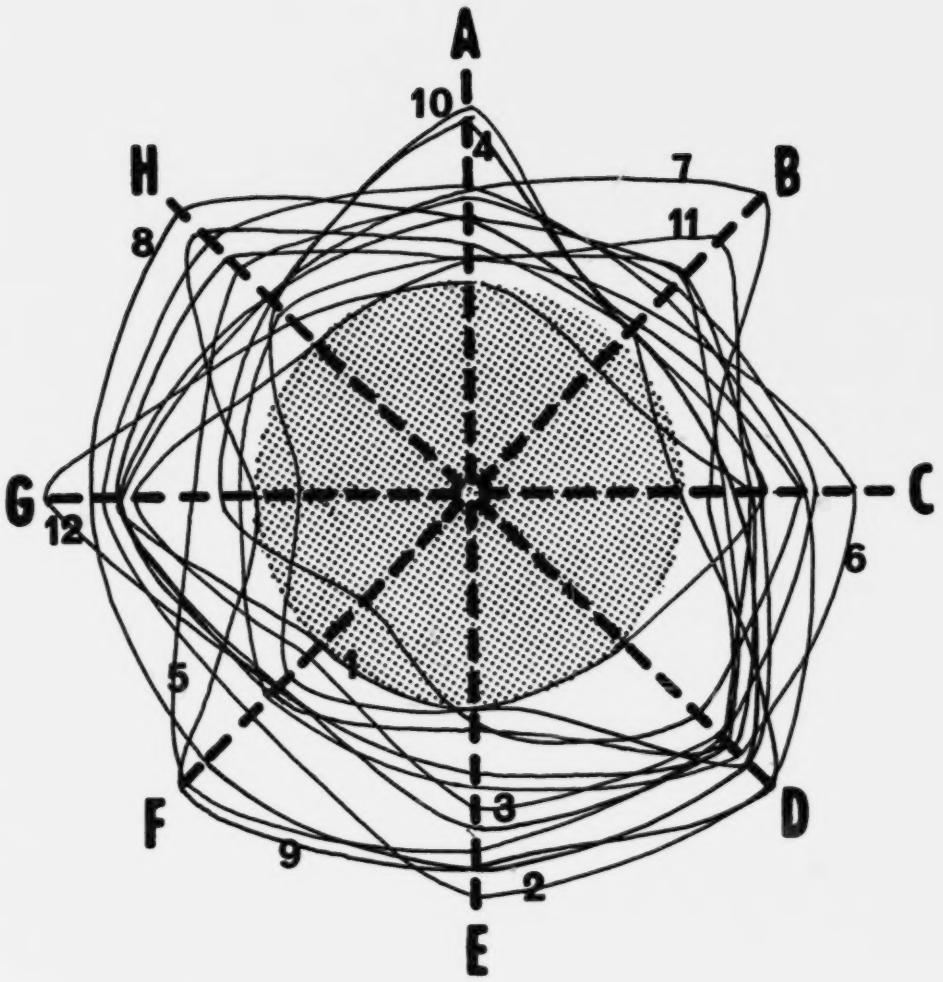
ST. JOSEPH'S ACADEMY
Caudill, Rowlett & Scott



SEAGRAM BUILDING
Ludwig Mies van der Rohe & Philip Johnson



YALE UNIVERSITY SCHOOL OF ART & ARCHITECTURE
Paul Rudolph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Now strictly as an academic exercise, let's see if Stone, Mies, S.O.M., Yamasaki, Wright, Saarinen and the others together could reach the ultimate ten-mark circle by superimposing all of their buildings on one chart. The numbers represent the following: 1. Guggenheim Museum, 2. Taliesin West, 3. TWA Flight Center, 4. Hillsdale High School, 5. Tennessee Building, 6. U.S. Embassy in New Delhi, 7. St. Louis Air Terminal, 8. Yale University Residence Halls, 9. Seagram Building, 10. The Olin Hall of Science, 11. St. Joseph's Academy, and 12. Yale University School of Art and Architecture.

They very nearly do. What does this mean? Little, except that the exercise is intriguing and challenging. Will anyone ever achieve a perfect, total architecture?

Now that we have managed to dissect architecture into eight distinct segments, we want to tell you that it really can't be done. The Structure at Taliesin is really a firm part of the Emotional Environment, which cannot be separated from Space, which, of course, must be related to the Concept. And so on and so on. We know it is the WHOLE that counts. But we also know that the diagnostician must isolate the specific area of trouble before he can recommend treatment that will make the parts whole again. So we repeat: It is the WHOLE that counts.

We suppose we can be criticized for developing this method of evaluating design quality on the basis that you cannot have an objective approach to a subjective situation. Call it what you may. It does bring us a little closer to a better CRS architecture.

INVESTIGATION SERIES

No.	Title & Date	Author
1	Some Thoughts Concerning Beauty June 1960	William W. Caudill Thomas A. Bullock
2	Air Conditioning of Schools June 1960	William W. Caudill William M. Pena
3	Decentralized School vs. Centralized School July 1960	C. Herbert Paseur
4	On-the-Spot Design of a School for Religion September 1960	Franklin D. Lawyer
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7	Investigating the Feasibility and the Cost of Fallout Protection for a New Schoolhouse July 1961	Convair-Fort Worth and the CRS Team
8	Shells and the Educating Process July 1963	William W. Caudill
9	The Primitive Quality in CRS Architecture April 1964	John M. Rowlett
10	Quality Profiles June 1964	William W. Caudill Franklin D. Lawyer Charles Lawrence

CAUDILL, ROWLETT AND SCOTT
Architects . Planners . Engineers
Houston . Oklahoma City . Stamford, Connecticut